

# EMT 10



## Operating instructions



# Foreword

These ORIGINAL OPERATING INSTRUCTIONS are designed to provide sufficient instruction for the safe operation of the truck. The information is presented in a precise and clear manner.

The chapters are arranged by letter. Each chapter starts with page 1. The individual pages are identified by the chapter letter and page number. Example: Page B 2 is the second page of chapter B.

These operating instructions detail different truck versions. When operating and performing maintenance work on the truck, make sure that you use the description that applies to your truck type.

Safety notices and important explanations are indicated by the following icons:



Used before safety instructions that must be observed to avoid danger to personnel.



Used before notices that must be observed to avoid material damage.



Used before notices and explanations.



Used to indicate standard equipment.



Used to indicate optional equipment.

Our trucks are subject to ongoing development. We reserve the right to alter the design, features and technical aspects of the equipment. No guarantee of particular features of the truck should therefore be assumed from these operating instructions.

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# Contents

A Correct Use	A 1
B Truck Description	
1 Application	B 1
1.1 Hour Meter	B 1
2 Assemblies	B 1
2.1 EN Standards	B 2
2.2 Operating Conditions	B 2
3 Technical Specifications: Standard Version	B 3
3.1 Performance Data for Standard Trucks	B 3
3.2 Dimensions	B 3
4 Identification Points and Data Plates	B 4
4.1 Truck Data Plate	B 5
C Transport and Commissioning	
1 Loading by Crane	C 1
2 Securing the Truck during Transport	C 1
3 Using the Truck for the First Time	C 2
3.1 Assembling the Coupling	C 2
D Battery – Maintenance, Charging, Changing	
1 Safety Regulations for Handling Acid Batteries	D 1
2 Battery Types	D 2
3 Charging the Battery	D 2
E Operation	
1 Safety Regulations for the Operation of the Truck	E 1
2 Controls and Displays	E 2
3 Starting up the Truck	E 3
4 Industrial Truck Operation	E 4
4.1 Safety Regulations for Truck Operation	E 4
4.2 Adjusting the Tiller	E 5
4.3 Travel, Steering, Braking	E 5
4.4 Parking the Truck Securely	E 6
4.5 Coupling	E 7
4.5.1 Hook-in Coupling	E 7
4.5.2 Adjusting the Coupling	E 8
4.6 Travelling with Trailers	E 8
5 Battery Discharge Indicator	E 9
6 Troubleshooting	E 9

## F Truck Maintenance

1	Operational Safety and Environmental Protection	F 1
2	Maintenance Safety Regulations	F 1
3	Maintenance and Inspection	F 3
4	Maintenance Checklist	F 4
5	Lubrication Schedule	F 5
5.1	Consumables	F 5
6	Maintenance Instructions	F 5
6.1	Preparing the Truck for Maintenance and Repair Work	F 5
6.2	Tightening the Wheel Nuts	F 6
6.3	Removing the Truck Panel	F 6
6.4	Battery Replacement	F 6
6.5	Drive Wheels	F 7
6.5.1	Changing the Drive Wheels	F 7
6.5.2	Changing the Tube	F 7
6.6	Recommissioning	F 7
7	Decommissioning the Truck	F 8
7.1	Actions Prior to Decommissioning	F 8
7.2	Actions during Decommissioning	F 8
7.3	Returning the Truck to Operation after Decommissioning	F 9
8	Safety Tests to Be Performed at Intervals and after Unusual Events	F 9
9	Final Decommissioning, Disposal	F 10

# A Correct Use

The vehicle described in these operating instructions is a truck designed for transporting load units. It must be used, operated and serviced in accordance with these operating instructions. All other types of use are beyond its scope of application and may result in damage to personnel, the truck or property. In particular, avoid overloading with loads that are too heavy. The data plate attached to the truck or the load chart is binding for the maximum load capacity. The truck must not be used in areas at risk of fire or explosion, or areas that are corrosive or excessively dusty.

**Operating company responsibilities:** For the purposes of these operating instructions, the "operating company" is defined as any natural or legal person who either uses the industrial truck himself, or on whose behalf it is used. In special cases (e.g. leasing or renting), the operating company is considered to be the person who, in accordance with existing contractual agreements between the owner and user of the truck, is charged with operational duties.

The operating company must ensure that the truck is used only for the purpose for which it is intended and that danger to life and limb of the user and third parties are excluded. Furthermore, accident prevention regulations, safety regulations and operating, servicing and repair guidelines must be followed. The operating company must ensure that all users have read and understood these operating instructions.



Failure to comply with these operating instructions shall invalidate the warranty. The same applies if improper work is carried out on the truck by the customer and/or third parties without the permission of the manufacturer's customer service department.

**Attaching accessories:** The attachment or installation of additional equipment that affects or supplements the functions of the truck requires the written permission of the manufacturer. Local authority approval may also need to be obtained. However, obtaining the approval of authorities does not replace the authorisation from the manufacturer.

# B Truck Description

## 1 Application

The EMT 10 is a two-wheel, tiller-operated electric tow tractor. It is designed to transport goods on level, dry and load-sustaining surfaces in buildings up to 2000 m above sea level using a trailer coupling. The truck is powerful yet economical. An on-board battery charger allows for easy charging at 230 V sockets. The maximum trailer load is indicated on the data plate.

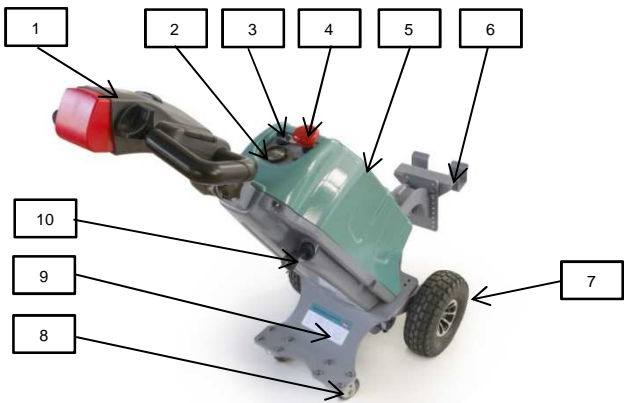
### 1.1 Hour Meter

Service hours are counted while the truck is operational and the following control has been actuated:

- Ignition switch in position 1 "on".

The hour meter is functional when the hourglass symbol is flashing on the battery indicator (2).

## 2 Assemblies



Item	Description	Item	Description
1	Tiller	6	Trailer coupling
2	Battery indicator	7	Drive wheels
3	Ignition switch and key	8	Support wheels
4	Main switch (emergency disconnect)	9	Data plate
5	Battery cover	10	Charge connector and charger cable

## **2.1 EN Standards**

Electromagnetic compatibility (EMC)

The manufacturer confirms that the truck adheres to the limits for electromagnetic emissions and resistance.



No changes to electric or electronic components or their arrangement may be made without the written agreement of the manufacturer.

## **2.2 Operating Conditions**


Ambient temperature

- For continuous operation: 5°C to 25°C
- For temporary operation (< 1 hour): 5°C to 40°C



Special equipment and authorisation are required if the truck is to be constantly used in conditions of extreme temperature fluctuations or humidity fluctuations.

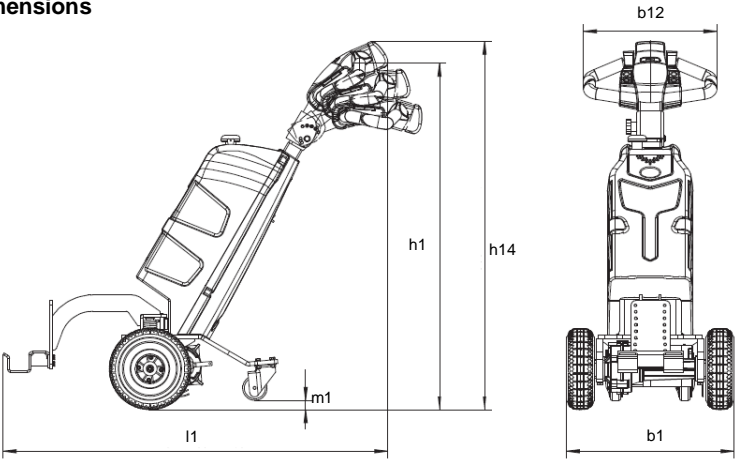
3 Technical Specifications: Standard Version

 Technical data specified in accordance with VDI 2198. Technical modifications and additions reserved.

3.1 Performance Data for Standard Trucks

	Description	EMT 10	
Q	Trailer load	1000	kg
N	Rated power	0.4	kW
v	Travel speed, forward / reverse	5 / 2.5	km/h
	Battery voltage / rated capacity	2 x 12 / 50	V / Ah

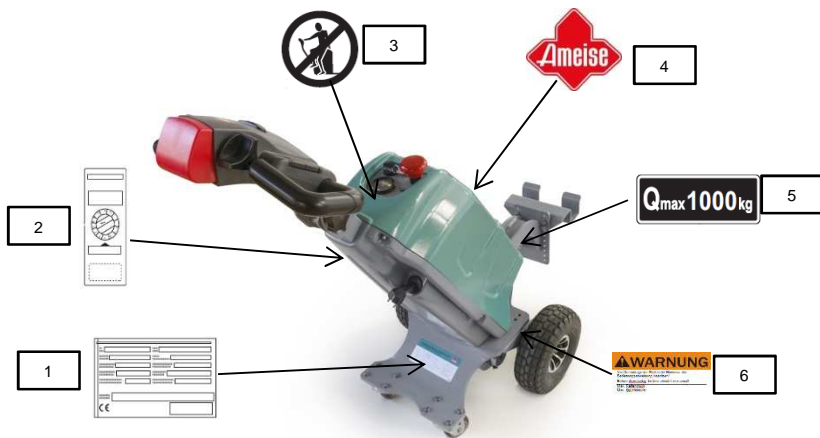
3.2 Dimensions



	Description		
	Net weight	98	kg
b1	Overall width	520	mm
b12	Width of tiller head	410	mm
h1	Height	937 - 1107	mm
h14	Tiller height in travel position	965 - 1135	mm
m1	Ground clearance of support wheels in travel mode	28	mm
l1	Overall length	1185 - 1285	mm
Wa	Turning radius	1185 - 1285	mm
S2	Motor capacity	0.4	kW




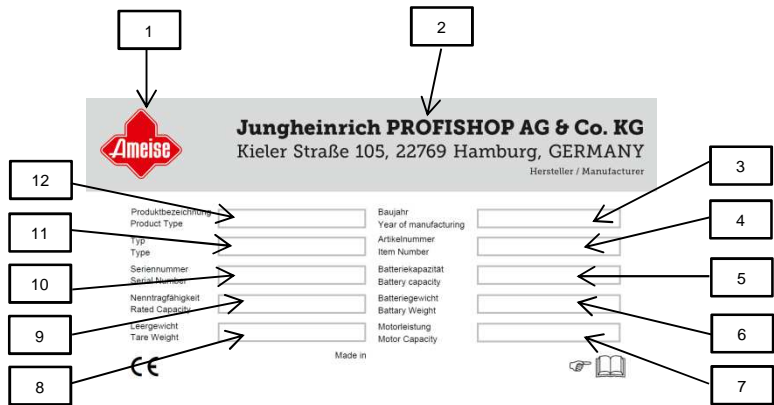
#### 4 Identification Points and Data Plates



Item	Description
1	Data plate
2	Inspection plaque (UVV – accident prevention regulations)
3	No riding
4	Ameise label
5	Max. trailer load
6	Warning about removing the wheels; max. permissible tyre air pressure

4.1 Truck Data Plate

 For truck-related queries or when ordering spare parts, always quote the serial number (10).



Item	Description	Item	Description
1	Brand logo	7	Motor capacity
2	Manufacturer/distributor	8	Tare weight
3	Year of manufacturing	9	Rated capacity
4	Item number	10	Serial number
5	Battery capacity	11	Model/type
6	Battery weight	12	Product type

# C Transport and Commissioning

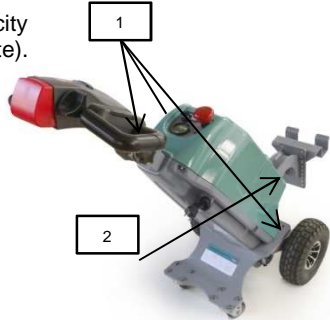
## 1 Loading by Crane



Only use lifting gear with sufficient capacity  
(For transport weight, see truck data plate).



Attachment points (1) are provided at  
the front and rear of the truck for  
loading by crane lifting gear.  
– Park the truck securely  
(see Chapter E).  
– Attach eyebolts to the rear holes (2).  
– Attach the crane lifting gear to the  
attachment points.

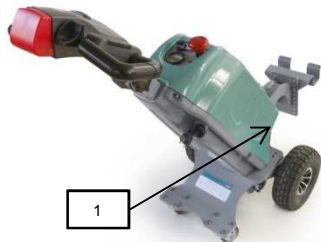


Attach the crane lifting gear to the attachment points  
so that the truck cannot slip.

## 2 Securing the Truck during Transport

The truck must be securely fastened,  
for example to a pallet, when  
transported on a lorry or a trailer.  
Otherwise, the lorry must have  
lashing rings.

To fasten the truck, pull tensioning  
straps over the truck. Screw eyebolts  
into the holes provided (1) and attach  
the tensioning straps. Tighten the  
tensioning straps with the tensioner.



Loading must be performed only by trained personnel in  
accordance with recommendations contained in Guidelines  
VDI 2700 and VDI 2703.

In each case, correct measurements must be made and appropriate  
safety measures adopted.

### 3 Using the Truck for the First Time



Operate the truck with battery current only. Rectified AC current will damage the electronic components.

To prepare the truck for operation after delivery or after transport, proceed as follows:

- Make sure that the equipment is complete and in a satisfactory condition.
- Install the battery where required. Do not damage the battery cables (see chapter D).
- Charge the battery (see Chapter D).
- Start up the truck in accordance with the instructions (see Chapter E).

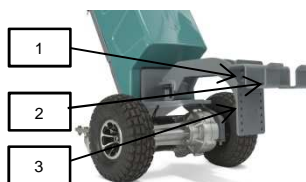


Parking the truck for a long period will result in flat spots on the running surfaces of the tyres. The flattening will disappear after a short period of operation.

#### 3.1 Assembling the Coupling

The coupling must be assembled.

- Reposition the coupling (2) on the perforated plate (3).
- Fit and tighten the four accompanying bolts (1).
- Insert the coupling inserts into the coupling and secure with the accompanying side supports and bolts.



# D Battery – Maintenance, Charging, Changing

## 1 Safety Regulations for Handling Acid Batteries

Park the truck securely before carrying out any work on the batteries (see Chapter E).

**Maintenance personnel:** Batteries may only be charged, serviced or replaced by trained personnel. These operating instructions and the manufacturer's instructions concerning batteries and charging stations must be observed when carrying out the work.

**Fire-protection measures:** Do not smoke and do not use naked flames when handling batteries. Wherever the truck is parked for charging, there must be no inflammable material or consumables capable of creating sparks within a 2-metre area of the truck. The room must be ventilated. Fire protection equipment must be available.

**Battery maintenance:** The battery-cell covers must be kept dry and clean. The terminals and cable lugs must be clean, secure and have a light coating of terminal grease. Batteries with non-insulated terminals must be covered with a non-slip insulating mat.

**Battery disposal:** Batteries must be disposed of in accordance with national environmental protection regulations or disposal laws. The manufacturer's disposal instructions must be followed.



Batteries contain dissolved acid, which is toxic and caustic. For this reason, protective clothing and eye protection must be worn whenever work is undertaken on batteries.

Avoid contact with battery acid without fail.

Nevertheless, should clothing, skin or eyes come in contact with battery acid, the affected parts must be rinsed immediately with plenty of clean water – if the skin or eyes are affected, call for a doctor immediately. Neutralise any spilled battery acid immediately.



The weight and dimensions of the battery have a considerable effect on the operational safety of the truck. Battery equipment must be replaced only with the agreement of the manufacturer.

## 2 Battery Types

The truck is supplied with the following battery type:

6-GFM-50 12 V / 50 Ah

The battery weighs 14 kg.



When replacing/installing the battery, make sure that the battery is securely seated in the battery compartment of the truck.

Replacement battery:

2 x "standard" AGM block battery LxWxH 197x165x170 mm 12 V / 45 Ah
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## 3 Charging the Battery



To charge the battery, the truck must be parked in a closed and properly ventilated room.



The battery charger must not be opened. If damaged, it must be replaced.

### Mains connection

Mains voltage: 230 V (+10/-15%)

Mains frequency: 50 Hz / 60 Hz

– The mains cable for the battery charger can be accessed from the outside.

– Plug the mains connector (1) into a mains socket.

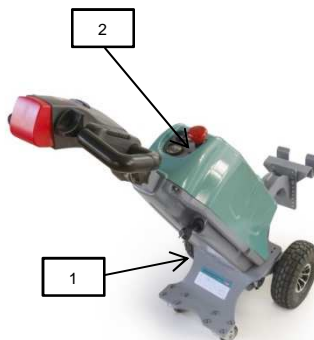
The LED (2) lights up permanently in red to indicate that the battery charger is connected to the mains.

– Charge the battery until the LED (2) produces a permanent green light.

The battery is fully charged.

The battery charger changes to compensation charge. The compensation charge lasts until the mains connector is removed from the mains socket.

– Unplug the mains connector (1) from the mains socket and insert it in its receptacle.





When the mains connector (1) is connected to the mains, all the truck electrical functions are interrupted (electrical immobiliser). The truck cannot be operated.

The charging time can take up to 11 hours depending on the battery discharge status.

#### **Partial charging**

The battery charger is designed to automatically adapt to partially charged batteries. This keeps battery wear to a low level. A red flashing LED (2) means that the battery is faulty or the charge current circuit has been interrupted.

# E Operation

## 1 Safety Regulations for the Operation of the Truck

**Driver authorisation:** The truck may be used only by suitably trained personnel, who have demonstrated to the operating company or its representative that they can drive and handle loads and have been authorised to operate the truck by the operating company or its representative.

**Driver's rights, obligations and responsibilities:** The driver must be informed of his duties and responsibilities, be instructed in the operation of the truck and be familiar with the operating instructions. The driver shall be afforded all due rights. Safety shoes must be worn when operating pedestrian-operated trucks.

**Unauthorised use of truck:** The driver is responsible for the truck while in use. The driver must prevent unauthorised persons from driving or operating the truck. Do not carry passengers.

**Damage and faults:** The supervisor must be immediately informed of any damage or faults to the truck or attachment. Trucks that are unsafe for operation (e.g. due to worn tyres or faulty brakes) must not be used until they have been properly repaired.

**Repairs:** The driver must not carry out any repairs or alterations to the truck without the necessary training and authorisation to do so. The driver must never disable or adjust safety equipment or switches.

**Hazardous area:** The hazardous area is defined as the area in which people are at risk from the truck movement, the load handler (e.g. trailer) or the load itself. This also includes areas that can be reached by falling loads or by the trailer veering.

**Direction of operation:** For pedestrian-operated trucks, the direction in which the load is pulled is always assumed to be the forward direction.

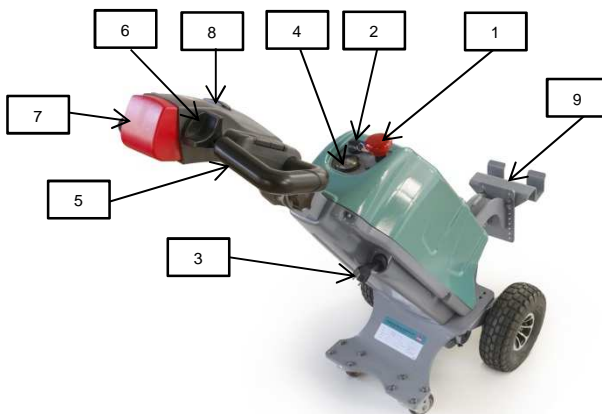


Unauthorised persons must be kept away from the hazardous area. Where there is danger to personnel, a warning must be sounded with sufficient notice. If unauthorised personnel are then still within the hazardous area, the truck must be brought to a halt immediately.

**Safety equipment and warning notices:** The safety equipment, warning notices and warning instructions described here must be strictly observed.



## 2 Controls and Displays



	Control	Function
1	Main switch (emergency disconnect)	Disconnects the power supply, deactivates all electrical functions, causing the truck to brake automatically.
2	Key switch	Switches the truck on and off. Removing the key can protect the truck from being switched on by unauthorised personnel.
3	Mains connector	Used to charge the battery.
4	Battery indicator	Displays the battery capacity. The service hours are also displayed. A flashing hourglass indicates that the hour meter is functional.
5	Tiller	Guides the truck
6	Travel controller	Controls the travel direction and the speed.
7	Impact protection switch	Safety function! The truck is controlled in the "reverse" travel direction until the impact protection switch is no longer in contact with any objects or people.
8	Horn button	Actuation causes a signal to be output
9	Trailer coupling	For pulling loads.

### 3 Starting up the Truck



Before the truck can be commissioned or operated, the driver must ensure that there is nobody within the hazardous area. The driver must ensure that the truck is in a drivable condition.



Any faults or damage must be rectified by the manufacturer's service department.

#### **Checks and operations to be performed before starting daily work**

– Inspect the entire truck (especially the wheels and the trailer coupling) for damage.

#### **Switching on the truck**

- Pull up the main switch (1).
- Insert the key in the key switch (2) and turn it clockwise as far as it will go to position "1" "On". (See page E 2)
- Test the horn (8).
- Test the travel controller (6). (See page E 2)
- Inspect the trailer coupling (9) for obvious structural damage. (See page E 2)

The truck is now ready for operation.



The display instrument (4) indicates the available battery capacity.

## 4 Industrial Truck Operation

### 4.1 Safety Regulations for Truck Operation

**Travel paths and work areas:** Use only paths that are sufficiently wide and designated for traffic. Unauthorised third parties must stay away from work areas. Loads must be stored only in places specially designated for this purpose.

**Travel conduct:** The operator must adapt the travel speed to local conditions. The truck must travel at slow speed when negotiating bends or narrow passageways, when passing through swing doors and at blind spots. The operator must always allow an adequate braking distance between the truck and the vehicle in front and must be in control of the truck at all times. Abrupt stopping (except in emergencies), rapid U-turns and overtaking at dangerous or blind spots are not permitted. Do not lean out or reach beyond the working and operating area.

**Travel visibility:** The operator must look in the direction of travel and must always have a clear view of the route ahead. The truck must travel with the load at the rear. If this is not possible, e.g. when shunting, the operator must ensure that the shunting area is free. If the driver does not have a clear view, a second person must act as a lookout for the shunting area.

**Negotiating slopes and inclines:** The technical truck specifications do not permit operation on slopes or inclines! The truck must not be turned, operated at an angle or parked on inclines or slopes.

**Negotiating lifts and docks:** Lifts and docks may be used only if they have sufficient capacity, are suitable for driving on and authorised for truck traffic by the owner. The operator must satisfy himself of the above before entering these areas. The truck must enter lifts with the load in front and must take up a position that does not allow it to come into contact with the walls of the lift shaft.

Persons riding in the lift with the truck must enter the lift only after the truck has come to a rest and must leave the lift before the truck.

**Towing trailers:** Do not exceed the maximum trailer load specified for the truck for trailers with or without brakes. The trailer load must be correctly secured and must not exceed the dimensions permitted for the travel paths. After coupling, the operator must ensure before commencing travel that the trailer is firmly seated on the coupling and cannot inadvertently come loose.

Trucks towing a load must be operated so as to ensure that the trailer travels safely and can be braked safely under any conditions.

## 4.2 Adjusting the Tiller

The tiller can be adjusted to meet the operator's ergonomic requirements.

- Loosen the knurled screw (1)
- Push the tiller (2) up or down.



## 4.3 Travel, Steering, Braking



Be extremely careful when driving and steering, especially if parts of your body extend outside the truck geometry.

To steer, move the tiller to the right or left; the truck will follow the movement of the tiller since the tiller is fixed to the truck and the truck turns around the drive wheel, following the tiller.

### Emergency disconnect

- Push down the main switch (1) (see page E 2).
- All electrical functions are deactivated.

### Travel



Travel is permitted only when the battery cover is properly secured.

- Start up the truck (see section 3).
- Set the travel controller (6) to the desired travel direction (forwards or reverse).



The truck begins travel in the selected direction.

The travel speed is governed by the travel controller (6).  
When shunting, the travel speed is restricted to 2.5 km/h.

## EMERGENCY STOP



When the speed controller (6) is released, automatic braking (an emergency stop) occurs – the travel controller automatically turns to the zero position.

If the speed controller does not automatically turn to the zero position, the truck must be taken out of service via the emergency disconnect, marked as such and repaired by the manufacturer's service department.

## Braking



The brake pattern of the truck depends largely on the travel conditions and the load to be towed. The operator must take this into account when driving the truck.



The operator must be looking ahead when travelling. If there is no hazard, brake moderately to avoid moving the load and to prevent the trailer from veering out.

The truck can brake in two ways:

- Using the regenerative brake (coasting brake)
- Using the inversion brake (travel controller)

### Regenerative braking (coasting brake):

– Release the travel controller (6) – the travel controller goes to the zero position. Depending on the setting, the truck brakes regeneratively using the coasting brake.



The brake force on the standard truck can be set by the manufacturer's service department.

### Inversion braking:

– During travel, set the travel controller (6) to the opposite direction. The truck is braked through a counter current until it starts to move in the opposite direction.



The brake force depends on the position of the travel controller.

## 4.4 Parking the Truck Securely

When you leave the truck, it must be securely parked – even if you only intend to leave it for a short time.



Do not park the truck on a slope!

- Turn the key switch (2) to the "OFF" position ("0") and remove the key.
- Push the main switch (emergency disconnect) (1) to the "OFF" position.

## 4.5 Coupling



When coupling and uncoupling trailers, the tow tractor and the trailer must be on level ground. The tow tractor and the trailer must be secured to prevent any accidental movement.

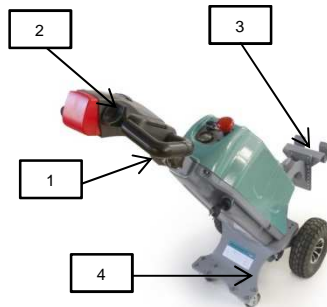


Trapping hazard! When coupling a trailer, avoid trapping your hands between any truck components.

### 4.5.1 Hook-in Coupling

#### **Coupling the trailer**

- Make sure that the trailer is secured against inadvertent movement.
- Raise the truck at the tiller (1).
- Actuate the travel controller (2) in order to slide the truck and coupling (3) under the edge of the trailer.



#### **Uncoupling the trailer**

- Make sure that the trailer cannot move accidentally.
- Raise the truck at the tiller (1).
- Actuate the travel controller (2) in order to pull out the truck and coupling from underneath the trailer.

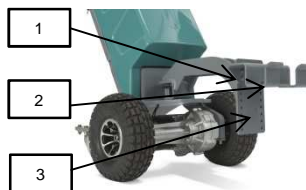


Unintentional uncoupling of the load! Before towing the load, make sure that the load is resting correctly on the coupling. This is the case when the support wheels (4) are not in contact with the ground and the edge of the, for example, pallet carrier is resting correctly in the groove of the coupling. The load is held by the net weight in the coupling.

### 4.5.2 Adjusting the Coupling

The coupling height must be adjusted to the corresponding trailer as necessary.

- Remove the bolts (1).
- Reposition the coupling (2) on the perforated plate (3).
- Refit and tighten the bolts (1).



### 4.6 Travelling with Trailers



In difficult operating conditions (smooth or slippery travel lanes), the trailer load must be reduced as necessary to ensure braking without risk of accidents. The maximum load specified applies only for towing on level, non-slip ground with sufficient capacity.



Always pull, never push trailers.



Familiarise yourself with the braking system and the steering of the trailer when you start to travel.



On cornering with long trailers, note how the angle is reduced.

1. Travel slowly, then carefully increase the travel speed.
2. To stop, reduce the speed so that both the tow tractor and the trailer gradually slow down. Brake with care!

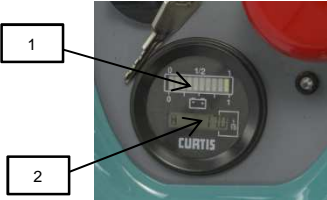


Trailers are difficult to shunt. For this reason, make sure the angle is correct when cornering.

## 5 Battery Discharge Indicator

As soon as the key switch has been enabled, the battery capacity is indicated on the battery discharge indicator.

- The LED strip (1) on the battery indicator displays the battery capacity.
- The hour meter (2) shows the total number of service hours for which the truck has been in use. The hourglass symbol indicates that the service hours are being recorded.



If the battery capacity is too low, the truck will travel only very slowly. A signal also sounds. The truck batteries need to be charged in order to ensure that the batteries are not damaged through deep discharge.

## 6 Troubleshooting

This chapter enables the user to localise and rectify basic faults or the results of incorrect operation himself. When trying to locate a fault, proceed in the order shown in the table.



If the fault cannot be rectified after carrying out the actions, notify the manufacturer's service department, as any further troubleshooting can be performed only by specially trained and qualified service personnel.

Fault	Possible cause	Actions
Truck does not move.	<ul style="list-style-type: none"><li>– Main switch (emergency disconnect) pressed.</li><li>– Key switch in position "0".</li><li>– Battery charge too low.</li><li>– Faulty fuse.</li><li>– Release the main switch.</li></ul>	<ul style="list-style-type: none"><li>– Turn the key switch to position "1".</li><li>– Check the battery charge, charge the battery if necessary.</li><li>– Check the fuses.</li></ul>



# F Truck Maintenance

## 1 Operational Safety and Environmental Protection

The maintenance and inspection duties contained in this chapter must be performed in accordance with the intervals indicated in the maintenance checklists.



Any modification to the truck, in particular the safety equipment, is prohibited. Do not alter the truck operating speeds under any circumstances.



Only original spare parts have been subject to our quality control. To ensure safe and reliable operation, use only the manufacturer's spare parts. Used parts and consumables must be disposed of in accordance with the applicable environmental-protection regulations. For oil changes, contact the manufacturer's specialist department. Upon completion of inspections and maintenance, the tasks contained in the "Recommissioning" section must be performed (see chapter F).

## 2 Maintenance Safety Regulations

**Maintenance personnel:** Trucks must be serviced and repaired only by the manufacturer's trained personnel. The manufacturer's service department has field technicians specially trained for these tasks. We therefore recommend a maintenance contract with the manufacturer's local service centre.

**Lifting and jacking up:** When a truck is to be lifted, the lifting accessories must be secured only to the points specially provided for this purpose. When jacking up the equipment, take appropriate measures to prevent it from slipping or tipping over (e.g. wedges, wooden blocks).

**Cleaning:** Do not use flammable liquids to clean the truck. Prior to cleaning, implement all necessary safety measures to prevent sparking (e.g. through short circuits). Only weak suction or compressed air and non-conductive antistatic brushes may be used for cleaning electric or electronic assemblies.



If the truck is to be cleaned with a water jet or a high-pressure cleaner, all electrical and electronic assemblies must be carefully covered beforehand as moisture can cause malfunctions. Do not clean with a steam jet. On completion of the cleaning work, carry out the activities detailed in the "Recommissioning" section.

**Working on the electrical system:** Only suitably trained electricians may carry out work on the electrical system. Prior to the commencement of any work, all required measures must be taken to prevent electric shocks. For battery-operated trucks, also de-energise the truck by disconnecting the battery connector.

**Welding:** To avoid damaging electric or electronic components, remove these from the truck before performing welding operations.

**Settings:** When repairing or replacing electric or electronic components, always observe the truck-specific settings.

**Tyres:** The quality of tyres affects the operational stability and performance of the truck. When replacing factory-fitted tyres, use only original manufacturer's spare parts. Otherwise, the truck may not comply with the data-sheet specifications. When changing wheels and tyres, ensure that the truck is not skewed (e.g. always replace the left and right wheels at the same time).

### 3 Maintenance and Inspection

Thorough and expert servicing is one of the most important requirements for the safe operation of the truck. Failure to perform regular maintenance can lead to truck failure and poses a potential hazard to personnel and equipment.



The service intervals stated are based on single-shift operation under normal operating conditions. The intervals must be reduced accordingly if more stringent requirements are placed on the equipment, e.g., use in conditions of extreme dust, temperature fluctuations or multiple shifts. The following maintenance checklist lists the activities to be performed and the respective intervals to be observed.

Maintenance intervals are defined as follows:

W = Every 50 service hours, but at least once a week

A = Every 500 service hours, but at least once every six months

B = Every 1000 service hours, but at least once a year

C = Every 2000 service hours, but at least once a year



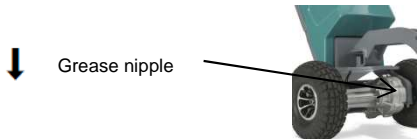
"W" maintenance interval operations must be performed by the operating company.

During the run-in period – after approx. 100 service hours – the operating company must check the wheel nuts/wheel bolts and re-tighten if necessary.

#### 4 Maintenance Checklist

			W	A	B	C
<b>Chassis/ super- structure</b>	1.1	Check all load-bearing components for damage	●			
	1.2	Check screw connections	●			
	1.3	Check warnings for damage	●			
<b>Drive system</b>	2.1	Check transmission for noise and leakage			●	
<b>Wheels</b>	3.1	Check for wear and damage		●		
	3.2	Check bearings and attachment			●	
<b>Steering</b>	4.1	Check the mechanical parts, grease if necessary	●			
<b>Electrical system</b>	5.1	Test operation	●			
	5.2	Make sure cable connections are secure and check for damage			●	
	5.3	Make sure switches are secure and are operating correctly	●			
	5.4	Test warning devices and safety switches	●			
<b>Electric motors</b>	6.1	Check motor attachments			●	
<b>Battery</b>	7.1	Check terminals are securely attached and apply terminal-screw grease			●	
	7.2	Clean battery connections, make sure they are tight			●	
	7.3	Check battery cables for damage, replace if necessary			●	
	7.4	Check battery for damage		●		
<b>Lubrication</b>	8.1	Lubricate the truck			●	
<b>General measure- ments</b>	9.1	Check electrical system for frame leakage			●	
	9.2	Test the brake function	●			
	9.3	Test safety equipment and cut-outs	●			

## 5 Lubrication Schedule



### 5.1 Consumables

**Handling consumables:** Consumables must always be handled correctly. Follow the manufacturer's instructions.



Improper handling is hazardous to health, life and the environment. Consumables must be stored only in appropriate containers. They may be flammable and must therefore not come into contact with hot components or naked flames. Only use clean containers when filling up with consumables. Do not mix consumables of different grades. The only exception to this is if mixing is expressly prescribed in the corresponding operating instructions.

Avoid spillage. Spilled liquids must be removed immediately with a suitable bonding agent and the bonding agent-consumable mixture must be disposed of in accordance with regulations.

Code	Saponifi- cation	Dew point °C	Worked penetration at 25°C	NLGI grade	Application temperature °C
E	Lithium	185	265 - 295	2	-35 +120

## 6 Maintenance Instructions

### 6.1 Preparing the Truck for Maintenance and Repair Work

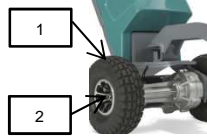
All necessary safety measures must be taken to avoid accidents when carrying out maintenance and repair work. The following preparations must be made:

- Park the truck securely (see Chapter E).

## 6.2 Tightening the Wheel Nuts

Tighten the wheel bolts on the drive wheel according to the maintenance intervals in the maintenance checklist (after 100 service hours for the run-in period, thereafter every 500 hours or at least every six months).

– Tighten all wheel bolts (2) on the drive wheel (1) with a socket wrench.



Remove the socket wrench after the wheel bolts have been tightened.

## 6.3 Removing the Truck Panel



Park the truck securely (see Chapter E).

- Loosen 4 bolts from the rear cover.
- Guide the charge connector through the opening in the rear panel.
- Remove the rear cover panel in a downwards direction.
- Remove the top cover panel in an upwards direction.



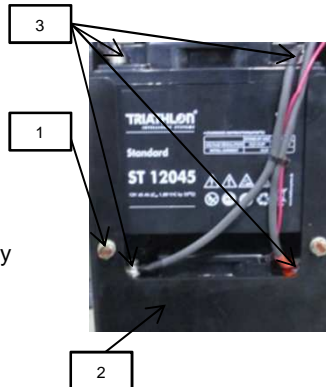
Attachment is in the reverse order.



Travel is permitted only when the panel is properly secured.

## 6.4 Battery Replacement

- Loosen the screws on the rear cover panel and remove the truck panel.
- Loosen the bolts (1) for the battery attachments (2) and remove the battery attachment
- Undo the terminal screws (3) for the battery and remove the battery cables from the terminals. Place the battery cables in such a way that they will not get caught on the truck when the battery is removed.
- Lift out the batteries.
- Proceed in reverse order for the replacement.



## 6.5 Drive Wheels

### 6.5.1 Changing the Drive Wheels

- Jack up the truck on one side
- Remove the axle nuts
- Pull the wheel off the axle
- Proceed in reverse order to replace the wheel.

#### **Permissible drive wheels**

Only original drive wheels sold by the manufacturer are permitted on this truck. Drive wheels can be ordered via the manufacturer's service department.

#### **Permissible air pressure**

350 kPa – 3.5 bar



The rim of the drive wheel consists of 2 half shells screwed together with 4 screws. These screws must not be loosened whenever the tyre is still on the axle.

### 6.5.2 Changing the Tube

- Loosen the 4 screws on the rim
- Change the tube
- Screw the rim halves back together

## 6.6 Recommissioning

The truck must not be restored to service after cleaning or maintenance work until the following operations have been performed:

- Test the horn.
- Test the main switch.
- Test the brake.
- Lubricate the truck in accordance with the lubrication schedule.

## 7 Decommissioning the Truck

If the truck is to be decommissioned for more than two months, e.g. for operational reasons, it must be stored in a frost-free and dry room and all the necessary actions must be taken before, during and after decommissioning as described.



While decommissioned, the truck must be jacked up so that all the wheels are clear of the ground. This is the only way of ensuring that the wheels and wheel bearings are not damaged.

If the truck is to be out of service for more than 6 months, further measures must be taken in consultation with the manufacturer's service department.

### 7.1 Actions Prior to Decommissioning

- Thoroughly clean the truck.
- Apply a thin layer of oil or grease to any non-painted mechanical components.
- Lubricate the truck in accordance with the lubrication schedule (see Chapter F).
- Charge the battery (see Chapter D).
- Disconnect the battery, clean it and grease the terminal screws with terminal grease.



- The battery manufacturer's instructions must also be observed.
- Apply a suitable contact spray to all exposed electrical contacts.

### 7.2 Actions during Decommissioning

#### **Every 2 months:**

- Charge the battery (see Chapter D).



Battery-powered trucks:

The battery must be charged at regular intervals to avoid depletion of the battery through self-discharge. The sulphation would otherwise destroy the battery.



### 7.3 Returning the Truck to Operation after Decommissioning

- Thoroughly clean the truck.
- Lubricate the truck in accordance with the lubrication schedule (see Chapter F).
- Clean the battery, grease the terminal screws with terminal grease and connect the battery.
- Charge the battery (see Chapter D).
- Check the transmission oil for condensate water and replace if necessary.
- Start up the truck (see chapter E).



Battery-powered trucks:

If there are switching problems in the electrical system, apply contact spray to the exposed contacts and remove any oxide layers on the contacts of the controls by applying them repeatedly.



Perform several brake tests immediately after recommissioning the truck.

### 8 Safety Tests to Be Performed at Intervals and after Unusual Events

The truck must be inspected at least annually or after any unusual event by a qualified inspector. The inspector shall assess the condition from purely a safety viewpoint, without regard to operational or economic circumstances. The inspector shall be sufficiently instructed and experienced to be able to assess the condition of the truck and the effectiveness of the safety equipment based on the technical regulations and principles governing the inspection of trucks. A thorough test of the truck must be undertaken with regard to its technical condition from a safety aspect. The truck must also be thoroughly examined for damage caused by possible improper use. An inspection report must be produced. The results of the inspection must be kept for at least the next two inspections. The operating company is responsible for ensuring that faults are immediately rectified.



The manufacturer has a specialist safety department with trained personnel to carry out inspections. An inspection plaque is attached to the truck as proof that it has passed the inspection. This plaque indicates in which month of which year the next inspection will be due.

## **9 Final Decommissioning, Disposal**



Final, correct decommissioning or disposal of the truck must be performed in accordance with the regulations of the country of use. In particular, regulations governing the disposal of batteries, consumables, the electronics and the electrical system must be observed.